**Participant Flow**

Enrolment

Excluded (n=2)

* Not meeting criteria (n = 2)
* Declined to participate (n = 0)
* Other reasons (n = 0)

Assessed for eligibility (n = 17)

Randomized (N/A)

Allocation

Allocated to intervention (n = 15)

* Received allocated intervention (n = 15)
* Did not receive allocated intervention (n = 0)

Analysis

Analysed (n = 15)

* Excluded from analysis (n = 0)

**Baseline Characteristics**

**Table 1.** Baseline demographic (age and gender) and characteristics for each group.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male | Female | All |
| N | 7 | 8 | 15 |
| Age (yr) | 62 ± 3 | 70 ± 9 | 66 ± 8 |
| Height (cm) | 174.2 ± 6.7 | 163.1 ± 5.4\* | 168.3 ± 8.2 |
| Weight (kg) | 79.0 ± 9.4 | 67.7 ± 15.9 | 73.0 ± 14.1 |
| BMI (kg/m2) | 26.0 ± 2.2 | 25.2 ± 4.6 | 25.6 ± 3.6 |
| Stimulation intensity (level 1 – 7) | 4 ± 1 | 5 ± 2 | 5 ± 2 |
| PASE Score | 218 ± 79 | 136 ± 59 | 174 ± 79 |

Values are mean ± SD. BMI, body mass index; PASE, the Physical Activity Scale for the Elderly. \* Significant gender difference, P < 0.05.

**Outcome Measures**

Primary outcomes

**Table 2.** Normalised electromyographic (EMG) activity of the *tibialis anterior*, *peroneus longus, gastrocnemius medialis* and *gastrocnemius lateralis* during 20 min of electrostimulation, at different knee joint angles. Time-points refer to: beginning (0 - 1 min), mid (9 – 10 min) and end (19 – 20 min).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | EMG activity (%) | | | | | | | | | Significance |
| 0 | | | 45 | | | 90 | | |
|  | 1 min | 10 min | 20 min | 1 min | 10 min | 20 min | 1 min | 10 min | 20 min |
| Tibialis anterior | 49.9 | 54.4 | 54.2 | 59.3 | 63.7 | 62.0 | 64.0 | 65.0 | 61.7 | P = 0.4  (*d* = 0.07) |
| Peroneus longus | 79.0 | 78.3 | 81.5 | 84.4 | 84.0 | 82.2 | 80.1 | 81.3 | 77.3 | P = 0.2  (*d* = 0.08) |
| Gastrocnemius medialis | 49.1 | 50.3 | 51.3 | 60.4 | 56.7 | 56.3 | 82.9\* | 83.1\* | 78.4\* | P = 0.002  (*d* = 0.54) |
| Gastrocnemius lateralis | 52.2 | 51.1 | 52.8 | 58.7# | 62.6# | 58.9# | 88.5\* | 80.6\* | 83.9\* | P = 0.0001 (*d* = 0.49) |

Values are mean ± SD. EMG, electromyography. \* Significantly greater EMG activity at 90 knee angle, P < 0.05. # Significantly greater EMG activity at 45 knee angle than at 0, P < 0.05.

**Table 3.** Static balance/proprioception times (FICSIT-4) before and after electrostimulation

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Electrostimulation | |
| Pre | Post |
| Balance stance |  | Time (s) | |
| Parallel | Eyes-open | 30 ± 0 | 30 ± 0 |
|  | Eyes-closed | 30 ± 0 | 30 ± 0 |
| Semi-tandem | Eyes-open | 30 ± 0 | 30 ± 0 |
|  | Eyes-closed | 30 ± 0 | 27.1 ± 7.8 (23.1 – 31.0) |
| Full-tandem | Eyes-open | 26.7 ± 8.8 (22.2 -31.1) | 29.1 ± 3.5 (27.3 – 30.9) |
|  | Eyes-closed | 14.4 ± 12.1 (8.3 – 20.6) | 13.5 ± 12.3 (7.3 – 19.8) |
| Single-leg | Eyes-open | 20.7 ± 11.1 (15.1 – 26.3) | 20.1 ± 12.3 (13.8 – 26.5) |
|  | Eyes-closed | 3.9 ± 2.9 (2.4 – 5.4) | 3.7 ± 2.3 (2.5 – 4.9) |

Values are mean ± SD (95% confidence intervals). No difference before and after.

**Table 4.** Participant limb volume (oedema) before and after electrostimulation.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Electrostimulation | | Significance |
| Pre | Post |
| Ankle girth (cm) | 25.9 ± 2.0 | 25.9 ± 1.7 | P > 0.05 |
| Knee girth (cm) | 37.8 ± 3.2 | 37.8 ± 3.1 | P > 0.05 |
| Thigh girth (cm) | 44.2 ± 4.2 | 44.1 ± 4.1 | P > 0.05 |
| Volume (mL) | 5426.2 ± 903.2 | 5422.4 ± 865.0 | P > 0.05 |

No difference between limb volumes before and after electrostimulation.

Secondary outcomes

**Table 5.** Participant discomfort

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Discomfort scale |  | Male | Female | All |
| VAS (0 – 10) | 0° | 1.7 ± 0.8 | 2.3 ± 0.7 | 2.0 ± 0.8 |
|  | 45° | 1.9 ± 0.7 | 2.0 ± 0.5 | 1.9 ± 0.6 |
|  | 90° | 1.6 ± 0.8 | 1.8 ± 0.7 | 1.7 ± 0.7 |
| VRS (1 – 7) | 0° | 2.1 ± 0.4 | 2.3 ± 0.7 | 2.2 ± 0.6 |
|  | 45° | 2.3 ± 0.5 | 2.0 ± 0.5 | 2.1 ± 0.5 |
|  | 90° | 2.1 ± 0.4 | 2.0 ± 0.4 | 2.1 ± 0.5 |

Values are mean ± SD. VAS, visual analogue scale; VRS, verbal rating score.

**Table 6.** Habitual physical activity (Physical Activity Scale for the Elderly [PASE] questionnaire)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Male | Female | All |
| N | 7 | 8 | 15 |
| Age (yr) | 62 ± 3 | 70 ± 9 | 66 ± 8 |
| PASE Score | 218 ± 79 | 136 ± 59 | 174 ± 79 |

Values are mean ± SD. PASE, the Physical Activity Scale for the Elderly

**Adverse Events**

No adverse events associated with this study